

CLAIMS

1 1. A method of detecting spark in an igniter in a gas turbine
2 engine, comprising:

3 a) providing a transformer having

4 i) a primary which carries igniter current

5 and

6 ii) a secondary of inductance L;

7 b) connecting the secondary in series with a resistance
8 R and capacitance C; and

9 c) inferring presence of spark by detecting signals in
10 capacitance C.

1 2. Method according to claim 1, wherein a cable connects to
2 the igniter, the cable and the igniter are surrounded by an
3 conductive electrical shield connected to an engine frame, and the
4 secondary comprises a coil wrapped around part of the shield,
5 wherein the core of the coil comprises said part.

1 3. Apparatus, comprising:

2 a) an igniter for use within a gas turbine engine;

3 b) a coil adjacent a housing of the igniter, which
4 produces signals when sparks are generated in the
5 igniter.

1 4. Apparatus according to claim 3, and further comprising:

2 c) a capacitor in series with the inductor,

3 d) a resistor in series with the capacitor,
4 wherein the capacitor, the resistor, and the coil form an RLC
5 circuit which amplifies a signal in the coil.

1 5. Apparatus for detecting spark in an igniter in a gas
2 turbine engine, comprising:

3 a) a transformer having

4 i) a primary which carries igniter current

5 and

6 ii) a secondary of inductance L;

7 b) a resistance R and capacitance C in series with the
8 inductance L; and

9 c) a detector for inferring spark by detecting signals
10 in capacitance C.

1 6. Apparatus according to claim 5 wherein a cable connects
2 to the igniter, the cable and the igniter are surrounded by an
3 conductive electrical shield connected to an engine frame, and the
4 secondary comprises a coil wrapped around part of the shield,
5 wherein the core of the coil comprises said part.

1 7. Apparatus, comprising:

2 a) a gas turbine engine having a frame or casing having
3 a potential defined as DC ground;

4 b) an igniter in the engine;

5 c) a supply cable which supplies current pulses to the

6 igniter;
7 d) a conductive shield around the supply cable, which
8 connects to a housing of the igniter, wherein the shield
9 and the housing are connected to said ground potential;
10 e) an exciter which provides said current to the
11 igniter, and which receives return current from the
12 igniter through
13 i) said shield, and
14 ii) a second path;
15 f) a detector comprising a coil and adjacent said
16 housing, which detects one or more of the following:
17 i) current pulses in the cable;
18 ii) current pulses in the housing; or
19 iii) differential between current pulses in
20 the cable and current pulses in the housing.

1 8. Apparatus according to claim 7, wherein the coil
2 comprises an inductance L, and further comprising:

3 g) resistance R and capacitance C which,
4 together with the coil, form an RLC circuit.

1 9. Apparatus according to claim 8, wherein the capacitance
2 C in the RLC circuit produces a signal voltage exceeding 50
3 millivolts in response to each current pulse.

1 10. Apparatus according to claim 7, wherein no electrical

2 conductors, apart from plasma-generating electrodes, contact the
3 supply cable.